

Listen Deep to Subterranean Kininfrastructures

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Introduction

This letter – addressed to the people of Sydney – contains an invitation. As a collection of reflections and thoughts it relates to four core ideas. (1) Urban undergrounds like tunnels, drains, and caverns, are vibrant and nourishing places. They are ecosystems and they are habitats. Undergrounds also present generous opportunities to consider parts of their city that are often made out-of-bounds. The cultural richness of the subterranean city can evoke a profound kind of connection for a city’s people. (2) I affirm that people can connect more meaningfully to a city by engaging in processes of *listening* to their city. More specifically, I refer to the practice of ‘deep listening’ to undergrounds. (3) Enacting this sonic connection can be mediated by planning that responds to the ‘cry for the right to the city’. (4) The infrastructures that thread into and amongst undergrounds often provide opportunities for nonhuman life to thrive and is so doing necessitate responsibility for humans to care for these infrastructures as kin especially when they are damaged by pollution or degradation. Water flows underneath cities. It flows through gutters into drains, pipes, and canals. It flows, often unseen, and even more often with voices unheard. This letter prompts stillness and reflection of these voices.

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Dear Sydney,

It’s been an intense few years lately. There’s been a lot going on. We’ve seen neighbourhoods transformed, city skylines stretched, and our lives shrunk into tighter and tighter border restrictions. There’s also been a stillness though. During lockdown, around my suburb there was a quietness resulting from the reduced number of planes, trucks, and cars. This letter is a prompt to reflect on that quiet, to embrace its gifts, and to listen – for some people this means to continue listening, and for others this means emerging into a practice of listening, attentively, deeply.

This letter is an invitation for quiet. To listen and connect to the waters that flow over, through and under what is now the city of Sydney – lands and waters of the Gadigal, Wangal, Wallumedegal, Boromedegal, Gamaragal, Borogegal, Birrabirragal and Gayamaygal peoples. I call

for settlers and uninvited guests – myself as a non-Indigenous person included - to listen to First Nations Peoples' stories and knowledges. But beyond listening, to act as well.

If we listen, we can hear the voices of the subterranean urban waterscapes – humming, singing, whistling, screeching out from below. These waters...these infrastructures, they aren't just pipes and drains and canals and ponds – they are homes. They are kin. They are *kininfrastructure*. They are nurturing spaces, mating spaces, feeding spaces for troglobites and trogloliths and stygobites: tadpoles, worms, moths, beetles, spiders, eels, bats, and plants that thrive in dark and damp places: mangroves, paperbarks, ferns, mosses, and of course, the fungi. They are *waters*. They are speaking.

This letter contains a collection of reflections and thoughts that relate to four core ideas. The first core idea is that urban undergrounds like tunnels, drains, and caverns, are vibrant and nourishing places. They are ecosystems and they are habitats. Undergrounds also present generous opportunities for people to investigate parts of their city that are often made out-of-bounds. The cultural richness of the subterranean city can evoke a profound kind of connection for a city's people. With core idea two, I affirm that people can connect more meaningfully to a city by engaging in processes of *listening* to their city. More specifically, I refer to the practice of 'deep listening' to undergrounds; Third, in practice, this sonic connection can come about from crafting urban design frameworks that instil a need to respond to the 'cry for the right to the city'; Finally, I suggest that the infrastructures that thread into and amongst undergrounds often provide opportunities for nonhuman life to thrive, and in so doing necessitate responsibility for humans to care for these infrastructures as kin.

Much like the drains and pipes that are described in this letter, these ideas will weave in and out, progressing and advancing, breaking and sinking. As I guide you through these thoughts, this letter will build upon itself to eventually proclaim that the very infrastructures of the city, in particular the water infrastructures that have been undergrounded, can be and should be considered as kin – as *kininfrastructure*. My hope is that this letter prompts you, as an individual, to contemplate on your position in the city and the network of relations that we find ourselves entangled within.

Home

Sydney is my home. I have addressed this letter to us, the inhabitants of Sydney. There is, of course, a good chance you might have picked this letter up even though it is not addressed to you – this is fine. If you are familiar with the city of Sydney, you might be aware of its wateriness, at least from the surface. For those perhaps less familiar, let me explain. Sydney is surrounded by waters – above and below. There are the large rivers, harbours and bays. And then there are the

smaller canals and creeks – the culturally peripheral waterways of urban Sydney. These are mostly enjoyed by those who live and play around them, but often are ignored as part of Sydney’s watery identity.

I write here today to invite you to reflect on these infrastructured waterways. They offer a glimpse into a way of thinking about, and acting with, urban Sydney that has great potential for moving towards an urban water justice: a *hydro-just city*. As volumetrically ambiguous and transformatively permeable ‘bodies’, many of these waters introduce a way of thinking about Sydney that extends below, into the subterranean network of waterscapes that lie under the city.

Encompassing much of the underground space under urban Sydney is a vast subterranean groundwater system referred to as the ‘Botany Sands Aquifer’. The aquifer’s large volume hints to its significance in shaping Sydney’s surface waterscapes. The map below shows the extent of the aquifer outlined in the bold blue line, as well as the ‘management zones’ indicating where groundwater can be extracted from, and where it cannot.

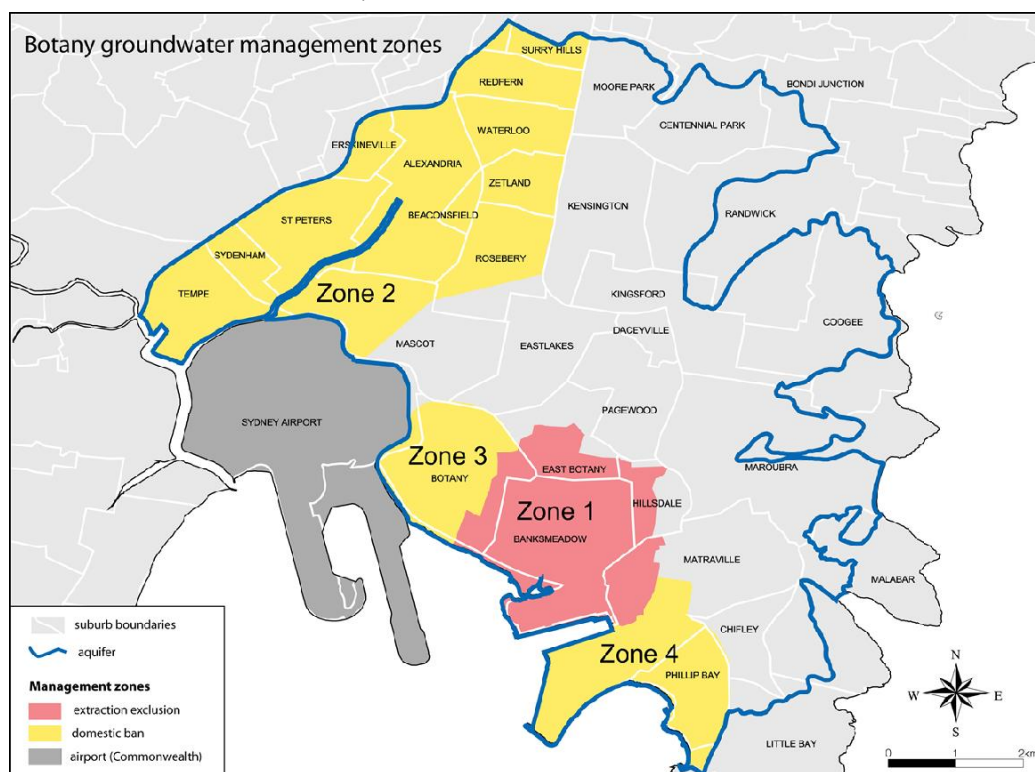


Fig 1. The Botany Sands Aquifer and associated management zones

Source: Courtesy Chris McAuley, TEESP

In a number of places across the eastern Sydney region, the aquifer has broken through the surface and emerged as springs, swamps, lagoons, marshes, and wetlands. Such permeable waterscapes suggest a hybrid, surface/sub-surface ‘*undergroundwaterscape*’ – a phrase set to affirm the ‘undergroundness’ of groundwaters, and the alimentionation of undergrounds. Surface swamps and wetlands of Sydney have been dredged by British settler-colonial actors, mostly during the

mid to late nineteenth century, but also by their descendants, who have remained in positions of power, deciding where and how to ‘manage’ Sydney’s waters (White 2010).

Being attentive to waters across and under the Sydney city necessitates acknowledging the material permeability of water. In particular, the wetland and aquifer system can be articulated through ways of visualising how the networks of watery bodies are connected in deeply material ways. It also involves acknowledging that these are dynamic waterscapes that have been controlled and manipulated by people. Within the last 250 years though, such control has been embroiled with dramatic acts of what might be thought of as violence. I allude here to the swamps and wetlands of Sydney that are no longer, waterscapes radically reshaped by British and European invaders. Many of these swamps were either dammed or dredged or drained, filled in, converted to canals, drains, or sent underground. However, these waterscapes still hold on in many places – memories of water laced together in the aqueous fabric across and under the Sydney peninsula, guided by topography and geology and shaped by equally undulating politics. Sydney is a watery city – not just a beach city, not just a harbour city, not just a river city, but a *swamp* city.

Across this ‘swamp city’, there are many instances of what I refer to as ‘kininfrastructure’. Kininfrastructures exist in a variety of forms, in a variety of places across the world, and they are certainly not limited to the subterranean nor the watery. Kininfrastructures might be thought of as the drains which are home to fish (Chester and Robson), cables that support flocks of birds (Morellia et al.), train tunnels which house bats (Théou and Loçe), highways that provide opportunities for scavenging (Rød-Eriksen et al.), and power stations warming manatees (Carr and Milstein), to name a few. Such spaces might be thought of with more critical precision by considering kininfrastructures as an assemblage of deep relations between humans and earthly kin, situated in a shared poetics of space (Bachelard). This relational assemblage also very much resonates with Deleuze and Guattari’s articulation, which, when thought from an acoustic or sonic perspective, becomes not simply about relations but about *conversations*. There is a need to acknowledge agency when it comes to conversations – especially a conversation in which one or more actors weren’t invited to be a part of, nor given consent to listen in on. AM Kanngieser’s work suggests that the ethics of listening can, and should, be considered throughout processes of deep listening. As per the fundamentals of deep listening, being acutely attentive to one’s surroundings means acknowledging when one is also not welcome. Both my own experiences and anecdotal communication with other ‘listeners’ bring up instances where post-recording equipment fails often with no explanation, where biophysical features intervene with the act of listening so as to make the listener’s experience so uneasy that they leave, or simply when what is expected to be a diverse sonic setting is in actuality void of discernible sonic qualities (silence). Such experiences and encounters might be understood as someone/something being, in its most agentic sense, responsive to being listened to without invitation or consent.

Whilst this responsiveness can indeed be situated within the concerns of ‘eavesdropping’, there are other instances of invasiveness which warrant consideration. Across Sydney, swampy bodies of water have been entangled with our human bodies of water. This further enhances the urgency for attention to be given to instances where injustice against bodies of water occur (Neimanis). Injustices against bodies of waters which, since British invasion on Gadigal lands, have manifested in numerous ways. From neglectful *and* wanton pollution of creeks and streams to the dredging of swamps throughout the region, the inability of the colonial state to acknowledge the connectivity of waterscapes across – and under – the Sydney city has, sadly, been dragged on into more contemporary instances of injustice, such as the Botany Orica Contamination (Hillier et al.; Chan). This particular contamination occurred from the production of chemicals by the company Orica (formerly ICI Australia) from the 1940s to 1980s. Orica operated their production facility in the southern suburb of Botany, on the shores of Botany Bay and right in the flow path of the Botany wetlands and the Botany Sands Aquifer. Groundwater across the region has been polluted with chlorinated hydrocarbons from the production facility, rendering domestic groundwater extraction unsafe (see Figure 1) (NSW EPA). Whilst groundwater and soil remediation efforts have been operational for some time now, it was only because of the fierce activism by those like resident Nancy Hillier OAM that Orica was held accountable. From this example, we can learn from the care that Hillier extended to not only the local residents in the area, but also to the very waters that flowed underneath the streets and homes of Botany. Hillier led the fight for being attentive to the hurt that the underground was experiencing and for holding those inflicting the hurt accountable. What is needed more broadly, I suggest, is to listen to the voice of water. To advance this and affirm this practice in a politics of justice and care, I assert the need to also listen to, and act upon, those who have had long, meaningful relationships to these waters.

For those like Hillier, the contamination of the area was part of a wider trend across Sydney at the time. A carelessness by those in power. This was, as Ian Rae and Paul Brown state ‘an era of unruly and even violent struggle between communities and developers’ (1586). In their struggle for justice, those like Nancy Hillier drew on the spectrum on concerns that residents had. Whether it be ‘mercury contamination, air emissions of chlorinated chemicals, noise issues and other incidents’ (Rae and Brown 1586) there was a firm drive from local activists to respond to the needs to their community – human and more-than-human. Because of the intensity of environmental transformation in Botany’s industrial areas, the experiences of the community transcend ‘traditional’ observations; changes to the environment were – and can be – felt through vibrations of demolition and construction, through the smell of chemical leaks, or seen through the billowing emissions spilling out across the region. This multi-sensorial attentiveness heightens the conversation around the ways which Hillier and others might have encountered environmental change. Whilst this letter firms calls for attention to the sonic, this must not come at the expense of the other senses. A practice of deep listening, according to Brearley ‘draws on many senses beyond what is simply heard’. At this point, I feel it important to mention that the

practice of deep listening need not exclude people with deafness. The act of listening goes beyond observable audial detection.

Listen Up, Listen Down

In this letter ‘listening’ is framed in both the material and the conceptual. It is a sonic experience and it is a theoretical experience. Listening pertains to attention. And attention transcends material phenomenon. Consider the groundwater at Botany being contaminated. Sonically, there might not be a discernible characteristic, but the environment ‘speaks’. By shifting the parameters of what ‘listening’ is, different (perhaps quiet) voices can be heard. By listening deeply and attentively, I hope parts of the city that might conventionally go unnoticed can come to the fore.

Before moving on, I put to you what does Sydney sound like to you? Listening to the sounds of the city attentively pushes the boundaries of the city’s depth – listen to the Earth, it has something to tell you. Listening to the sounds of the city should also introduce the idea that in urban environments, silence (in a material sense) is very rarely achieved (Cage). At a structural level, the materials of the Earth itself – water, rock, wind, magma, sand – are constantly making sound. The Earth is speaking from below, *from the deep*.

To work towards listening to such voices, guidance can be found in the work and practice of Aunty Miriam Rose Ungunmerr-Baumann, a Ngangikurungkurr Elder from the Daly River, Northern Territory. Within her writings, she articulates the concept of *dadirri* as ‘an inner, deep listening and quiet, still awareness’ (Ungunmerr-Baumann). Ungunmerr-Baumann introduces this term by sharing another, ‘*Ngangikurungkurr*’ means ‘Deep Water Sounds’. ‘*Ngangikurungkurr*’, she writes ‘is the name of my tribe. The word can be broken up into three parts: *Ngangi* means word or sound, *Kuri* means water, and *kurr* means deep’. ‘So’, Ungunmerr-Baumann continues ‘the name of my people means “the Deep Water Sounds” or “Sounds of the Deep”’. The idea that waters deep in the earth – connected waters – can be heard through a process of ‘inner, deep listening and quiet, still awareness’ is powerful. As written by Leah Brearley, ‘The closest we can get to describing [deep listening] in English is deep and respectful listening which builds community. Deep listening can be applied as a way of being together, as a research methodology and as a way of making a difference’. Thoughts on deep listening lead me to wonder, how might the sounds of colonisation obfuscate the ability to listen in a place as ‘noisy’ as urban Sydney? Commentaries on deep listening are not without their issues. In more recent years, the idea has been commandeered by varying New Age movements to appropriate – often for financial gain – what is a resoundingly reverent and profoundly cultural practice. Further, as with all practices of listening, there is an inherent bias against those who are deaf or have hearing impairments. This bias must be considered as contributing to the awareness that listening is most often done without acknowledging the privilege that doing it entails.

Questions of deafness and listening more generally work to centre the conversation on loudness. Of course, though, ‘the prevailing assumption’, as Deaf poet and essayist Fiona Murphy states, ‘is that deaf people hear nothing, that they don’t experience sound at all’ (3). Murphy addresses this by stating, ‘I feel sound rolling over my skin. I see it shimmer off other faces. I taste it in my mouth. Sometimes, it is all too much’. I want to acknowledge that as a person with no major hearing issues apart from episodic tinnitus, acts of listening that I engage with are done from, largely, almost entirely the auditory. I acknowledge that others, including those reading this letter, might not have the same experiences of hearing, or indeed listening as I do. We should all, always, be thinking about this. Being attentive to the diversity of hearing within our communities will enrich our interactions with each other, and with place.

Attentiveness to such diversity will also further discussions around how Deaf geographies of the city (Harold) are considered against the substantial literature on the right to the city. Indeed, asserting a rights discourse into the design and governance of what a Deaf City might be is at the heart of the work by those like Harold. How are streets designed, for example, to not just enable but promote a deaf-friendly city? Figure 2 shows, with quite some detail, what a Deaf City might be. In affirming the ‘the disproportionate attention granted to visual geographies and the act of seeing’, Harold highlights how, the ‘intangible aural architectures of modern life’ become contested (846). With such a bias in favour of the visual, attempts for cities and municipal councils to strive to minimise urban sound (Baringón Morillas et al.) poses several concerns for what a sonically diverse city might be and do, especially when ‘the clamour, the density, the sheer weight of the modern city is heard as a machinic, constant and “general assault on the senses”’ (Tonkiss 303). Out of these considerations, the terms ‘listening’, ‘hearing’, ‘voice’, and ‘silence’ all become ubiquitously contentious. Drawing on work by Karen Barad, these phenomena become emblematic of how ‘the notions of materiality and discursivity must be reworked in a way that acknowledges their mutual entailment’ (820). These terms come to present a duplicity of meaning; in one sense, they affirm the material attributes of the sonic, and also present a suite of metaphors which work to accentuate the injustices which the material presents - injustices which might best be worked through using rights as a framing.



Fig 2. Graphic of what a 'Deaf City' might be
Source: Vaughan & Ferris, 2018

Right

Within the settings of the city, when rights are considered, they are most often situated against the work of French philosopher and sociologist Henri Lefebvre and his work on the 'right to the city'. Commenting on Lefebvre, David Harvey (1) articulates this concept: "The right to the city is...far more than a right of individual access to the resources that the city embodies: it is a right

to change ourselves by changing the city more after our heart's desire'. A key question that emerges from my thinking on the right to the city focuses on threading together obligation (the changing) and demand (the desire): does the moral obligation to enable the right to the city overcome the moral claim that people have to that right? If, as Marcuse posits, 'the demand for the right to the city comes from the directly oppressed, the aspiration comes from the alienated' (32), then the confluence of those with a demand and those who have been alienated should result in action. *Should*.

So, why not? The demand is there. The aspiration is there. But then, I posit, where are the rights?! To me, it is a question of uneven relations. It is also a question of voice, listening, talking, conversing, and to use the language of Lefebvre, a question of 'the cry'. This prompts a series of questions: Who are the ones doing the 'cry for the right to the city'? What exactly is the cry for? Is it a demand? A plea? A wail? And further, is it to the right *to* the city? Rights *in* the city? Rights *of* the city? Or is it fundamentally less abstract?

'The cry', as Marcuse argues, 'is for the material necessities of life' (31). What could be more necessary, as Sultana and Loftus assert, then acknowledging the cry for the right to water. Further, considering the rights *of waters* expands the breadth and depth which 'the cry' encompasses. I am making reference to the rich and ever-growing literature surrounding rights of nature and legal personhood of rivers (Tanasescu; O'Donnell). Marcuse states – echoing Lefebvre – 'it is not the right to the existing city that is demanded, but the right to a future city' (35). Imagine, then, a setting where the rights to future waters are considered, with 'the cry' being that from the waters - an actor radically demanding and with palpable aspirations? To do this would require listening to that cry. So, demand and aspiration meet – for marginalised peoples and non-humans a – to assert 'the city of heart's desire'. A heart then, affirms much of the conceptual underpinnings of agency and post-humanism that are the focus of the lush literature of New Materialism.

The work done within New Materialism is, quite pointedly, in a state of vibrant emergence (Djuric). As such, providing a definition of New Materialism is difficult. For some, like Barad and Tim Ingold, there is a strong focus on 'agency'; Ingold stating,

things are active not because they are imbued with agency but because of ways in which they are caught up in these currents of the lifeworld. The properties of materials, then, are not fixed attributes of matter but are processual and relational. To describe these properties means telling their stories.(1).

Others like Donna Haraway and Val Plumwood assert a feminist approach to materialisms more generally and profess a need to dismantle inhibitive notions of dualisms and binaries. For me, I see New Materialism as a tool to unpack the complexities of phenomenology occurring with the generative possibilities of posthuman feminism's normative ethics. To bring this together, what is being framed in these considerations is actually a cry for the right to the city of heart's desire.

Significantly though, the ‘voice’ doing the ‘cry’ matters. Whether it be waters themselves – agentive and entangled with human and more-than-human bodies – or those who have been marginalised, designing cities to be responsive to all cries is, I believe, important. To respond to the needs and desires of people who haven’t been given a priority in the design of cities – like deaf people – might the right to the city then begin to make a difference? Materially? And discursively?

Relatives

Houston and colleagues argue that ‘refiguring rights to the city and finding ethical, just and inclusive forms of urban planning’ requires attention be given to processes and outcomes of ‘re-enchanting urban connectivities through multispecies relationships’ (8). I would extend that to not only species, but also to both non-human originated abiotic features (mountains, glaciers, rivers, caves, sand dunes, swamps etc.) and also to human-constructed infrastructures. Threading together these concerns over ‘relations’ with ‘right to the city’ is deepened by situating Lefebvre’s ‘cry’ within what Johnston (636) articulates as ‘the very cry of the nonhuman’. Significantly though, I argue that any attention given to such a cry, and the potential connectivity that might emerge from that attentiveness, can and should be taken further to recognise the entanglements between all relationships with human-originated infrastructures. Out of this, the attunement to the *relationality* of a *relationship* is given a more critical – and in many ways more fluid – interpretation. As relatives – familial kin – infrastructure in distress or abuse are entangled back into questions of obligation, responsibility and, fundamentally, rights. ‘Infrastructure’, writes Star, ‘is both relational and ecological’ (377). A critical component of relational infrastructures, as with almost all relationships, is communication. If infrastructures, such as underground stormwater drains, are considered as kin, then understanding the complexities of this relationality might be further advanced through processes of deep listening. Further, encompassing waters as infrastructures both deepens and broadens the scope for such listening practices. However, this process of water being infrastructure might be thought of as submitting to human-control. To work through this, geographical consideration of space and time can help, and affirming the kinness of waters. Water might be kinfractured at one point in time and space, but this needn’t be the entire story. As waters flow and pulse through valleys and aquifers, trapped in dams and gushed out of taps, they *become*. Indeed, as those like Swyngedouw would argue, waters move through ‘a combined physical and social process, as a hybridized socionatural flow that fuses together nature and society in inseparable manners’ (2006 in 2009, 56). With such consideration, the agency that waters have becomes pressing.

Engaging with waters (both as the multiple and the agentive) requires a connective experience whereby waters can, through their silence, express either peace, violence, suffering, joy, content, anger, or sadness. As kinfractures existing within other kinfractures, waters are often

existent in silence: the smoothness of concrete canals might homogenise the sonic attributes of water; drains are often designed and constructed to send water underground, masking much of their sound; large ponds or retention basins often create stillness and silence as a result of their magnitudinous volume. The interpretation of waters' silence cannot be understood as occurring separately to the cultural conditions in which they occur. Put another way, cultural conditions often dictate how the silence of waters are understood. In Sydney, such culture is manifest most prevalently as the hegemonic power relations that have emerged from settler-colonialism. As a result, the ways of understanding the silence (and indeed the very voice) of waters within ways of knowing about waters are entangled with, and framed by, systems of oppression. If waters as infrastructures are considered as relational to the cultures which they exist within, this then raises a plethora of questions pertaining to the obligation of care, especially with regards to allowing or not allowing waters to speak when they have been actively silenced by the cultures and politics of contemporary settler-colonial urbanism.

Shhh

As stated by Handel, 'Listening is active; it allows age, experience, expectation, and expertise to influence perception' (3). In urban spaces, the 'activeness' of listening suggests intention, which will often result in design that will often work off the sounds present or absent, and seek to either amplify, quieten, or mute. The notion of water sent underground into pipes or underground drainage systems is particularly intriguing; what of the sound, materially present, but seldom ever listened to by those on the surface? In such a case, the deliberate creation of a 'waterless' soundscape in surface settings is a notable phenomenon, raising the question of what the agenda is in constructing cities to be listened to in such a particular way. A deliberate design feature of the urban soundscape, such as sending and keeping water underground, guides the question: what might be an alternative? And as an extension, is there benefit in hearing subterranean waterscapes in the surface city? Do cities need even more sound? Isn't the goal a quiet city?

When thinking through ideas of silence, it is easy to see the idea in a pejorative manner; think, the idea of silencing as an act of violence from one actor *onto* another – an oppressor and an oppressed. This might be a familiar notion due to the immediacy with which 'silencing' as a verb can be understood to an individual (the notion that, as children, we should 'be quiet'/'stay silent' comes to mind). However, that silence is viewed as a negative experience does not emerge in discourse as an unconditional phenomenon. Indeed, as Boaventure de Sousa Santos (150) notes, 'Western civilization is inherently biased against silence'. 'Silence', writes Montoya, 'creates a worldview that is imbedded with the values and interests of White supremacy' (271). It is this discussion surrounding silence that I find myself drawn to with some intensity. Bringing together silence with ideas of critical race theory, Montoya puts it thus:

persons and communities of color are silenced by the dominant majority, who maintain racial hegemony, in part, by enforcing a “unitary” language with controlled and limited set of meanings...One way the dominant majority maintains its racial hegemony is by privileging certain types of silence...and by ritualizing other types of silence’ (271).

Bringing critical race theory into a discussion surrounding water is something I am very cautious of doing – I am most certainly not suggesting that the experiences which persons and communities of colour and waters have are analogous. What I *am* suggesting is that the systems of oppression that manifest as structural violence – which many persons and communities of colour experience – are the very same systems which have seen the development of water infrastructures that oppress the liberty of waters to move freely and to exist without needing to serve. In Sydney, as in many places, this ‘system’ is part of the settler-colonial project.

Further, such systemic violence is also manifest in hegemonic narratives that silence is synonymous with being deaf. Similarly to how deep listening allows – promotes, even – deaf people to be attentive to their surroundings through a non-sonic listening practice, notions of experiencing silence can be enriched by celebrating the knowledges and understandings of those within the Deaf community. Sound, yes! But also, the coolness of wind blown over water, the pattering of rain on the tips of ears, the smell of a stagnant stormwater drain water, the taste of bitter water, sweet water, salty water, and the multitude of colours of waters, from deep dark teal through to lush turquoise So then, experiences of waters can transcend the sonic and so water’s silence, whilst important, can also be acknowledged as part of the rich characteristics that waters possess.

Contrary to silence then, would be loudness. However, it is not just that waters or knowledges of waters in Sydney aren’t loud enough, but rather very particular mechanisms have been put in place to keep waters and knowledges from being heard. Hydro-imperial engineering (D’souza; Pritchard) that seeks to control water’s movements reflects similar desires by the state to control people’s movements (Beatie and Morgan). In ‘shadowing’ waterscapes, the analogy of ‘shadowed’ communities emerges also, as do processes of peripheralisation and marginalisation – water silenced, community silenced. In Sydney, the sending of water away from the urbane and out to the margins either through, as mentioned, the sending under of water, or more commonly, the eradication of a surface waterscape through dredging or draining. Here, the waterscapes like those in Zetland mentioned at the beginning of the letter come to highlight this. What sets these processes apart, however, is that in addition to waters, it was also the ‘unwanted’ communities who were also sent to the margins, in places like Zetland, or further afield to Botany (Karskens and Rogowsky). If one stops and listens – deeply listens – then perhaps the voices of waters are conveying a *cry* – that the injustices that waters and the communities connected to them experience are ongoing and violent.

In this sense, I suggest that when listening to the voices of urban Sydney’s subterranean waters, it is done in a way that acknowledges the fact that waters aren’t invited to be sent underground. In many instances – they have been, in a sense, *undergrounded*. Very rarely is there an invitation to listen to these waters (Kangieser and Todd). Recognising the imbalance of power in relation to the absence of an invitation to communicate with the city is crucial to thinking with the layered histories of a place. Contemplation of what soundscapes, waters, and cities might be requires fundamental and active acts of listening deeply to the place (Ungunmerr-Baumann), done so in a way that is humble, sensitive and consistently reflexive; listening, but with justice as the major chord. With this as practice for urban design, cities can become more resilient, inclusive, and, quite firmly, just. They become places that facilitate the enactment of the cry to the right of the city of the heart’s desire. To move towards this, I suggest a reconceptualisation of Sydney’s subterranean hydrosocial soundscapes, and take heed of the advice from Gallagher and colleagues that, ‘rather than overly determining what sound “is”, we want to follow several threads regarding what sound might “do”’ (620).

So then, what would a hydro-just city sound like? This is up to us, the people of Sydney. In curating private soundtracks to our lives through noise-cancelling headphones...through being connected to devices that *ping*, *buzz*, *swoosh* and *pa-ching*, there is a visceral cacophony of noises and sounds that dominate. It will take effort to listen. Listening is not easy. Listening is reflexive and listening is traumatic. Crafting cities that foster listening requires designers to listen too. And policy-makers to listen – and act. A hydro-just city might bring the sounds – the *voices*, the *cries* – of subterranean waterscapes up to the surface. But that’s all for naught if no one is listening anyhow. Mostly, people listen if they care. So, it seems the issue is, really, about highlighting the relations that exist between people and their city. To do this, I suggest there needs to be a recasting of what both infrastructure and kin is.

Kinfrastructures

Ah yes, the kin. Our kin. Your kin. The voices, and indeed the bodies, of waters that are sent underground are entangled in what might be considered as a manifestation of the procedural infrastructures of the right to the city. Care is, fundamentally, a world-making practice (Slater). Whilst infrastructures of care (Lopes et al.) are significant for how ‘worlds’ look, feel and sound, what of the underlying protocols of care that facilitate the creation, planning, management and governance of these care-full infrastructures? In a sense, who is doing the care? And who is being cared for? Who crafts the protocols? Who designs the infrastructures? Whose voices are being listened to? There is a protocol that, in some way, responds to these questions – the 2011 Urban Design Protocol for Australian Cities. The protocol’s aim is ‘To create productive, sustainable and liveable places for people through leadership and the integration of design excellence.’ When I see this aim, I consider ‘care’. The phrase, ‘for people’ seems to indicate that the role of designers is invariably connected to processes and practices of care. However, that

the aim is immediately followed by ‘through leadership’ suggests that there is little, if any, doubt of the roles and responsibilities that designers and community have – Designers make, Communities receive. With such a hierarchical and binary relationality in place, it seems that the diversity of ‘community’ isn’t fully considered. That is, diversity in the human cultures, the groups made more disadvantaged than others, or indeed consideration of community to include the more-than-human.

The interrogation of this protocol is, in many ways, frustratingly enjoyable to work through. Frustrating in so much as the answers are obvious to those whose everyday lived experiences are the material realities of the decision made by those in power. But enjoyable in that they show repair (Jackson; Mattern) for what a city might look and sound like if marginalised peoples take control of the writing of protocols, and the designing of infrastructures. Repair, in this sense, being connected to an obligation of care – to repair is to care. And, as Jackson puts it ‘to care for something...is to bear and affirm a moral relation to it...Care brings the worlds of action and meaning back together, and reconnects the necessary work of maintenance with the forms of attachment that so often (but invisibly, at least to analysts) sustain it’ (232-233). A future of repair and care might be centred around a radical reconnection to not simply what the right to the city might be, but also what the right to the city might do. At the heart of this is a sensorial connection to the city and to the infrastructures which are woven into the surface and sub-surface waterscapes of such a spatial setting. Under this deeper relational experience, what possibilities might there be in accepting infrastructures recast as *kininfrastructures*, the term here alluding to a set of meaningful relational experiences between humans, more-than-humans, human constructed material infrastructures, and earthly forms and processes used as infrastructures by all. Attending to this is the material expression of what a hydro-just city would be.

I believe that what I have discussed in this letter can help to bring attention to the wonderful wateriness of Sydney – including its undergrounds. With how we communicate with cities now and in the future, there is a need to bring attention to the enduring knowledges of waterscapes, and to bring attention to the breadth of voices that are waiting to be listened to in our cities.

With quiet, stillness and reflection we just might get there.

Yours,
T. Coyne

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WORKS CITED

- Australian Government., *Urban Design Protocol for Australian Cities' Protocol Document Infrastructure* Australia, 2011.
- Barad, Karen. 'Posthuman Performativity: Towards an Understanding of How Matter comes to Matter'. *Signs: Journal of Women in Culture and Society*, vol. 28, no.3, 2003, pp. 801-833.
- _____. *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning*. Duke UP, 2007.
- Barrignon Morillas, Juan, Guillermo Rey Gozalo, David Montes Gonzalez, Pedro Atanasio Moraga, and Rosendo Vilchez Gomez. 'Noise Pollution and Urban Planning'. *Current Pollution Reports*, vol. 4, 2018, pp. 208-219.
- Beattie, James and Ruth Morgan. 'Engineering Edens on this "Rivered Earth"? A Review Article on Water Management and Hydro-Resilience in the British Empire, 1860s–1940s.' *Environmental History*, vol. 23, no. 1, 2017, pp. 39-63.
- Brearley, Leah. *Gulpa Ngawal: Indigenous Deep Listening*, RMIT, 2010.
- Cage, John. *Silence: Lectures and Writings*. Wesleyan U, 2011.
- Carr, John and Tema Milstein. 'Manatees and Fossil-Fuel Power Plants: The Paradox of Endangered Species Laws.' *Communicating Endangered Species: xtinction, News, and Public Policy*, edited by Eric Freedman, Sara Shipley Hiles and David B Sachsman. Routledge, 2022.
- Castrique, Sue. 'On the Margins of the Good Swamp'. *Griffith Review*, vol. 74. 2018.
- Chan, Nelson. 'The Worst Groundwater Contamination Incident in the Southern Hemisphere- A Case Study of Orica's Botany Industrial Park', *Pacific Rim Real Estate Society Annual Conference 22-25 January 2006 Auckland New Zealand*, 2006.
- Chester, Edwin and Belinda Robson. 'Anthropogenic Refuges for Freshwater Biodiversity: Their Ecological Characteristics and Management.' *Biological Conservation*, vol. 166, 2013, pp. 64-75.
- Dauenhauer, Bernard P. 'On Silence.' *Research in Phenomenology*, vol. 9, 1973, pp. 10-24.

- de Sousa Santos, Bonaventura. *Toward a New Common Sense: Law, Science, and Politics in the Paradigmatic Transition*. Routledge, 1995.
- Deleuze, Gilles and Felix Guatarri. *A Thousand Plateaus: Capitalism and Schizophrenia*, Trans. Brian Massumi. University of Minnesota Press, 1980.
- Djuric, Jelena. 'Emergence (of new materialism)', Almanac, 2018, accessed 29 April 2022 from: <https://newmaterialism.eu/almanac/e/emergence.html>
- D'Souza, Rohan. 'Water in British India: The Making of a "Colonial Hydrology."' *History Compass*, vol. 4, no. 4, 2006, pp. 621-628.
- Gallagher, Michael, AM Kannigieser and Jonathan Prior, 'Listening Geographies: Landscape, Affect and Geotechnologies'. *Progress in Human Geography*. vol 41, no. 5, 2017, pp. 618-637.
- Handel, Stephen. *Listening: An Introduction to the Perception of Auditory Events*. Cambridge, MIT Press, 1993.
- Haraway, Donna. 'Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective', *Feminist Studies*, vol. 14, no.3, 1998, pp. 575-599.
- Harold, Gill. 'Reconsidering South and the City: Asserting the Right to the Deaf-Friendly City'. *Environment and Planning D: Society and Space*, vol. 31, no. 5, 2013, pp. 846-862.
- Harvey, David. The Right to the City, *New Left Review*, vol 58, 2008.
- Hillier, Nancy OAM, Julia Gennissen, J, Beverley Pickering, Richard Smolenski and Paul Brown. 'Our Battle with Hexachlorobenzene: Citizen Perspectives on Toxic Waste in Botany'. *Journal of Environmental Management* , vol. 90, 2009, pp. 1605-1612.
- Houston, Donna, Jean Hillier, Diana MacCallum, Wendy Steele and Jason Byrne. 'Make Kin, not Cities! Multispecies Entanglements and "Becoming-World" in Planning Theory'. *Planning Theory*, vol. 17, no. 2, 2018, pp. 190-212.
- Howard-Wagner, Deidre. *Indigenous Invisibility in the City: Successful Resurgence and Community Development Hidden in Plain Sight*. Routledge, 2021.
- Ingold, Tim. 'Materials against Materiality.' *Archaeological Dialogues*, vol. 14, 2007, pp. 1-16.
- Jackson Steven J. 'Rethinking Repair'. *Media Technologies: Essays on Communication, Materiality, and Society*. Edited by Tarleton Gillespie, Pablo J Boczkowski and Kirsten A Foot. MIT Press, 2014, pp. 221-307.
- Johnston, Catherine. 'Beyond the Clearing: Towards a Dwelt Animal Geography'. *Progress in Human Geography*, vol. 32, no. 5, 2008, pp. 633-649.

- Kanngieser, AM and Zoe Todd. 'From Environmental Case Study to Environmental Kin Study', *History and Theory*, vol. 59, no.3, 2020, pp 385-393.
- Kanngieser, AM. *To Tend for, to Care with: Three Pieces on Listening as Method*. Seedbox Environmental Humanities Lab,, 2020. <https://theseedbox.se/blog/to-tend-for-to-care-with-three-pieces-on-listening-as-method/>. Accessed 29 April 2022.
- Karskens, Grace and Melita Rogowsky. *Histories of Green Square*. UNSW Printing and Publishing Services, 2004..
- Lefebvre, Henri. 'The Right to the City'. *Writings on Cities*. Edited by Eleonore Kofman and Elizabeth Lebas, Blackwell, 1996, pp. 63–184.
- Lopes, Abby Mellick, Stephen Healy, Emma Power, Louise Crabtree and Katherine Gibson. 'Infrastructures of Care: Opening up "Home" as Commons in a Hot City'. *Human Ecology Review*, vol. 24, no. 2, 2018, pp. 41-60.
- Marcuse, Peter. 'Whose Right(s) to what City?' *Cities for People, Not for Profit: Critical Urban Theory and the Right to the City*. Edited by Neil Brenner, Peter Marcuse and Margit Mayer, Routledge, 2011, pp. 24-41.
- Mattern, Shannon, *Maintenance and Care*, Places Journal, 2018,,: <https://placesjournal.org/article/maintenance-and-care/>. Accessed 29 April 2022.
- Montoya, Margaret E. 'Silence and Silencing: Their Centripetal and Centrifugal Forces in Legal Communication, Pedagogy and Discourse'. *University of Michigan Journal of Law Reform*, vol. 33, no.3, 2000, pp. 263-328.
- Morelli, Federico, Lesek Jerzak and Piotr Tryjanowski. 'Birds as Useful Indicators of High Nature Value (HNV) Farmland in Central Italy'. *Ecological Indicators*, vol. 38, 2013, pp. 236-242.
- Murphy, Fiona, *The Shape of Sound*, The Text Publishing Company, 2021.
- Neimanis, Astrida. *Bodies of Water: Posthuman Feminist Phenomenology*. Bloomsbury, 2017.
- O'Donnell, Erin. *Legal Rights for Rivers: Competition, Collaboration and Water Governance*, Routledge, 2018.
- Plumwood, Val. 'Nature in the Active Voice.' *Ecological Humanities*, vol. 46, 2009.
- Prtichard, Sara. 'From Hydroimperialism to Hydrocapitalism: "French" Hydraulics in France, North Africa, and Beyond.' *Social Studies of Science*, vol. 42, no. 4, 2012, pp. 591-615.
- Rae, Ian and Paul Brown. 'Managing the Intractable: Communicative Structures for Management of Hexachlorobenzene and other Scheduled Wastes'. *Journal of Environmental Management*, vol. 90, 2009, pp. 1583-1592.

- Rød-Eriksen, Lars, Johanna Skrutvold, Ivar Herfindal, Henrik Jensen and Nina E Eide. 'Highways associated with expansion of boreal scavengers into the alpine tundra of Fennoscandia.'. *Journal of Applied Ecology*, vol.57, no. 9, 2020, pp. 1861-1870.
- Slater, Lisa. 'Questioning Care'. *The Pedagogies of Cultural Studies*. Edited by Andrew Hickey, Routledge, 2016, pp. 119-132.
- Star, Susan L. 'The Ethnography of Infrastructure' *American Behavioural Scientist*, vol. 43, no. 3, 1999, :pp. 377-391.
- Sultana, Farhana and Alex Loftus. *Water Politics: Governance, Justice and the Right to Water*. London Routledge, 2019.
- Swyngedouw, Erik. 'Circulations and Metabolisms: (Hybrid) Natures and (Cyborg) Cities.' *Science as Culture*, vol. 15, no 2, 2006, pp. 105-122.
- Swyngedouw, Erik., 'The Political Economy and Political Ecology of the Hydro-Social Cycle.' *Journal of Contemporary Water Research and Education*, vol. 142, 2009, pp. 56-60.
- Tanasescu, Mihnea. *Environment, Political Representation, and the Challenge of Rights: Speaking for Nature*. Palgrave Macmillan, 2016.
- Théou, Philippe and Ervis Loçe. 'New Data on Bats in the Vlora County'. *Hypsugo*, vol. 4, no. 2, 2019,pp. 4-13.
- Tonkiss, Fran. 'Aural Postcards: Sound, Memory and the City'. *The Auditory Culture Reader*. Edited by Michael Bull and Les Back, Routledge, 2016.
- Ungunmerr-Baumann, Mirriam-Rose. *About Dadirri*.
1998.<https://www.miriamrosefoundation.org.au/dadirri/>
- Vaughan, Alex. 'DeafScape: Applying DeafSpace to Landscape'. *Ground Up Journal*, vol. 7, 2021, pp. 104-107.
- White, Arthur. 'The Natural History of Western Botany Bay' *The Natural History of Sydney*. Edited by. Daniel Lunney, Pat Hutchings and Dieter Hochuli, Royal Zoological Society of New South Wales, 2010, pp. 402-414.